

Remarks/Arguments:

Applicant wishes to thank the Examiner for his detailed comments. As Examiner has grouped his actions by sections, Applicant will respond to these sections one by one.

1-2. No response is believed necessary.

Claim Rejections –35USC § 103(a):

3. Examiner has stated that:

“Claims 1-3,5-6,8-9,12-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Terunuma* et al (6,329,211). *Terunuma* et al disclose a process of manufacturing a magnetic head, wherein the process comprises the steps of:

“Forming a first magnetic film (21), which resembles as the claimed P1 layer in order to form P1 pole; depositing a gap layer on the P1 pole layer and forming a second magnetic material as resembles the claimed P2 pole material (col.5, lines 34-43).

“*Terunuma* et al also disclose that forming a resist frame (60) by photolithography, wherein the resist frame having an opening (61) (figure 7) with a pattern corresponding to the pattern of the second magnetic pole (P2) to be formed (col.7, liens 48-51).

“*Terunuma* et al further disclose that the second magnetic film (22) is formed in the opening (61) of the resist frame by plating in order to form second pole (P2) (220), which is parallel to the first magnetic material layer (col.7, lines 52-60).

“*Terunuma* et al teach that trimming or dry etching is performed to form the first pole or P1 portion (210) protruding thereon and having track width substantially equal to the track width of the second pole (220) (col.10, lines 3-11 and figure 16).

“*Terunuma* et al fail to teach depositing the gap layer on the P1 protrusion.

However, since the claimed process steps are not in exact sequence, it would have been obvious to form the P1 protrusion after deposition of the gap layer because it has been held that the transposition of process steps, where the processes are substantially identical or equivalent in terms of function, manner and result, was held to be not patentably distinguish the processes. Ex parte Rub/n 128 USPQ 440 (PTO BdPatApp 1959).”

Applicant respectfully asserts that there are several misconceptions exhibited in these statements. Claim 1 of the present application states:

- 1 “1. A method for fabrication of magnetic write heads for disk drives, comprising:
 - 2 A) forming a P1 layer having a P1 Protrusion, said P1 Protrusion having a
 - 3 longitudinal axis;
 - 4 B) depositing a gap layer on said P1 Protrusion;

5 C) forming a fill material layer on said gap layer, said fill material layer being shaped
6 to form a mold mask which surrounds a hollow which is substantially aligned with said
7 longitudinal axis of said P1 Protrusion; and

8 D) filling said hollow in said fill material layer with P2 pole material to form a P2
9 pole which is substantially aligned with said P1 Protrusion.”
10

Specifically, Examiner has stated above:

15 “since the claimed process steps are not in exact sequence, it would have been obvious to
form the P1 protrusion after deposition of the gap layer because it has been held that the
transposition of process steps, where the processes are substantially identical or equivalent in
terms of function, manner and result, was held to be not patentably distinguish the processes.”

20 However, the sequence of actions claimed and disclosed in the present
application are shown to be in a definite order- the P1 protrusion is formed and
then the gap layer is formed on it, and the fill material is formed on the gap layer.
This is evident from both the drawing figures and the description. The formation of
the P1 protrusion after deposition of the gap is inconsistent with the language of
the claim and thus transposition of the sequence of actions is not possible.

25 The method of the present invention is built on this initial step of forming
the P1 layer having a P1 Protrusion as shown in Fig. 1 and described in the
specification on page 6, lines 4-13. This P1 Protrusion is crucial to the method, as
this protrusion is then carried through the gap layer, SiO₂ layer and RIE masking
layer to easily form an RIE mask having an opening which is precisely aligned
30 with the axis of the P1 pole. Thereafter, when the SiO₂ material is removed except
when protected by the RIE mask, a hollow shaft is created which will be filled with
the P2 material, which is again aligned with the axis of the P1 pole.

35 Thus, the P1 Protrusion is an important element of the independent Claim 1,
and is what allows the poles to be “self-aligning”. This self-aligning method
allows for much easier and more precise fabrication of components at smaller
scales than are possible using convention techniques.

The function of the P1 pole protrusion is to also control the alignment of the subsequent layers, a function not found in the *Terunuma* reference. The manner of fabrication is much different, as the present method allows for simplification of the alignment process in a manner that is much more efficient than that practiced in the
5 *Terunuma* reference. And finally, the result is a much narrower set of aligned poles which are produced at a reduced complexity of fabrication and in a more efficient manner, thus producing the result of reduced production cost and streamlined process flow. Therefore, the steps of fabrication of the present invention are not “substantially identical or equivalent in terms of function, manner
10 and result” to that of the cited reference, and the present invention cannot be fairly said to be obvious in view of the *Terunuma* reference.

Thus, this element of “forming a P1 layer having a P1 Protrusion” is not found in the *Terunuma* reference, and thus Claim 1 cannot be said to be either anticipated nor obvious in view of the cited reference. Applicant therefore
15 respectfully requests that the rejection be withdrawn and Claims 1 be allowed.

Examiner further states:

“As to claim 2, *Terunuma* et al teach that after trimming or ion milling the P1/gap/P2 structure, a second filling material of insulating material 27 is deposited and removed to expose the P2 pole (col.10, 57-65, figure 38).
20

“As to claim 3, *Terunuma* et al do not explicitly teach depositing an N3 layer on the P1 layer.

“However, since both the P1 layer and N3 layer are made out of same material, *Terunuma* et al broadly teach the deposition of N3 layer.
25

“As to claims 5-9, *Terunuma* et al teach that first and second magnetic material comprises NiFe, CoFe, or CoFeNi (col. 5, lines 48-54) and the gap layer material comprises AlSiO (col.5, lines 64-65).”

Thus Examiner has addressed Claims 1-3 and 5-9, but no mention is made of the rational for rejection of Claims 12-19. However, since independent Claims 1, 18 and 19 each include the feature of forming a P1 layer having a P1 Protrusion, and since dependent claims 2-17 all inherit this assertedly novel feature, Applicant
5 respectfully asserts that the claims are not anticipated by the cited reference.

Applicant therefore respectfully requests that the rejection be withdrawn and claims 1-3, 5-6, 8-9 and 12-19 be allowed.

4. Examiner has stated:

10 "Claims 4,7,10-11 are rejected under 35 U 103(a) as being unpatentable over *Terunuma et al* (6,329,211) as applied to claims 1-3,5-6,8-9,12-19 above, and further in view of *Kruger et al* (6,859,998).

Terunuma et al discusses..."

15 However, neither reference, nor any combination of cited references, includes the claimed feature of forming a P1 layer having a P1 Protrusion before forming the gap layer, etc. of the present invention. Since dependent claims 2-17 all inherit this assertedly novel feature, the present invention cannot be said to be obvious in view of the cited combination.

20 Applicant therefore respectfully requests that the rejection be withdrawn and claims 4, 7, 10-11 be allowed.

5. No response is believed necessary.

Conclusion:

Applicant has endeavored to put this case into complete condition for
5 allowance. It is thought that the §103 rejections were unfounded on the references
cited. Applicant therefore respectfully asks that the rejections be withdrawn and
that allowance of all claims presently in the case now be granted.

If the Examiner would like to discuss any of the points involved in the
Response, he is urged to contact Applicant's Attorney at the numbers included
10 below.

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